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where a temporary Seri rancheria was found occupied by about sixty of the tribe, including subchief Maahém, who speaks Spanish. In this part of the work the expedition was accompanied by Señor Pascual Encinas, the owner of the rancho visited, and doubtless the best informed white man concerning the habits, customs, personnel, and habitat of the tribe. About a week was spent in intercourse with the occupants of the rancheria, when the studies were brought to an end through the illness of Señor Encinas, and the consequent necessity for return to Hermosillo. The expedition then proceeded northwestward and northward along a route so laid as to define the western limits of Papagueria proper, and reached Tucson near the end of the year. In addition to the leader, the party comprised Mr William Dinwiddie, photographer; José Lewis, Papago interpreter, and E. P. Cunningham, teamster. The outfit was furnished chiefly by Mr J. M. Berger, of San Xavier (near Tucson). On the visit to the Seri frontier the party was accompanied by Señor Encinas, Don Arturo Alvemar-Leon (who acted as Spanish interpreter), and two or three attachés of Molino del Encinas.[1]

The second expedition was directed primarily toward investigation of the Seri, and only incidentally to continuation of the researches among the Papago. Outfitting at Tucson in October (again with the aid of Mr Berger), the expedition proceeded southward by a route different from those previously traversed, and carried forward a plane-table route survey covering a considerable zone from the international boundary at Sasabe to Rio Sonóra. Descending the previously unmapped course of Rio Bacuache, the expedition reached the Rancho de San Francisco de Costa Rica on December 1, 1895, and, although conditions were found unfavorable in that the Seri were on the warpath, immediately prepared for the extension of the work into Seriland.

A preliminary trip was made into the mainland portion of the Seri habitat, terminating at the crest of Johnson peak, the highest point in Sierra Seri. The triangulation and topographic surveys were carried over the territory traversed, and several points were fixed on Isla Tiburon; but the natives, agitated by a skirmish with vaqueros on the frontier a day or two earlier, had withdrawn to remoter parts of the territory, and were not encountered. The party returned to Costa Rica, a rude boat was completed, transported across the desert via Pozo Escalante to Embarcadero Andrade, and launched in Bahia Kunkaak. The surveys were extended to the southern portion of Sierra Seri and Isla Tasno, and, after various difficulties and delays due to dearth of fresh water, to gales, and to other causes, the party (enlarged for the purpose) finally landed on Tiburon. Many Seri rancherias were found on

[1] The more noteworthy details of the organization and work of the two expeditions are set forth in the administrative reports of the Bureau for the fiscal years 1894-95 and 1895-96. Certain members of this party are shown in the accompanying half-tone, forming plate II: Señor Encinas seated at the end of the table; his son, Don Manuel (bareheaded), and Don Ygnacio Lozania at his right; a grandson behind him, and Señor Alvemar-Leon seated at his left, with Maahém kneeling over the table in the foreground.

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both sides of Bahia Kunkaak and El Infernillo. Some of these had been occupied almost to the hour of the visit, but the occupants had taken flight, leaving most of their unattached possessions behind, and were not seen, though it was evident that, like wary birds and game animals, they kept the invaders in sight from points of vantage and hidden lairs. The eastern scarps and foot-slopes of Sierra Kunkaak were traversed extensively and repeatedly; its crest was crossed by Mr Johnson with a small party at a point west of Punta Narragansett, and the triangulation and topographic sketching were connected with the work on the mainland and carried over practically the entire surface of the island, being tied to the work of the Hydrographic Office about the coasts. Then, despairing of finding the wary natives, and having exhausted food supplies, the party returned to the mainland and thence to Costa Rica, arriving in the evening of December 31.

The original party comprised, in addition to the leader, Mr Willard D. Johnson, topographer; Mr J. W. Mitchell, photographer; Hugh Norris, Papago interpreter, and José Contrares, teamster. The party engaged in the expedition to Sierra Seri comprised the leader, Messrs Johnson and Mitchell, Mr L. K. Thompson of Hermosillo, Don Andrés Noriega of Costa Rica, José Contrares, and two Papago Indian guards, Miguel and Anton, of Costa Rica. The Tiburon party was made up of the leader, Messrs Johnson and Mitchell, S. C. Millard of Los Angeles, and Señores Andrés Noriega and Ygnacio Lozania, together with Ruperto Alvarez, a Yaqui Indian guard, and Miguel, Anton, Mariana, Anton Ortiz, and Anton Castillo, Papago guards; while Hugh Norris and José Contrares, with half a dozen Papago guards and other attachés of the rancho at Costa Rica, maintained an intermittent supply station at Embarcadero Andrade. Señor Encinas cooperated in the work of the expedition, part of the time at Costa Rica and part at Molino del Encinas, his principal hacienda in the outskirts of Hermosillo; while Mr Thompson and Dr W. J. Lyons aided in the work, the former at both Hermosillo and Costa Rica and the latter at Hermosillo.

The return trip from Costa Rica lay via Hermosillo, and permitted the extension of the plane-table surveys to this longitude. While at the city advantage was taken of the opportunity to obtain linguistic and other data from "El General" Kolusio, a full-blood Seri retained at the capital by the State for occasional duty as a Seri interpreter, who was obligingly assigned to the service of the party by Señor Don Ramón Corral, then governor of Sonora. At Hermosillo the leader of the expedition left the main party, which then proceeded northwestward and northward along the route followed by the 1894 expedition on the return journey, the party comprising Mr Johnson, in charge, with Messrs Mitchell and Millard, Hugh Norris, and José Contrares; and the plane-table surveys were continued and combined with the route surveys made on the outward journey.

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the wealth of place-names and the strongly accentuated configuration which the nomenclature expresses, Seriland is one of the most hopeless deserts of the American hemisphere.

ACKNOWLEDGMENTS

Since most of the field work of the two expeditions lay in the neighboring Republic of Mexico, it became necessary to ask official sanction for the operations from the Mexican government; and it is a pleasure to say that every possible privilege and courtesy were extended by both federal and state officials. Especial acknowledgments are due to the Mexican minister (and afterward ambassador) to the United States, his Excellency Don Mateo Romero (now deceased); to the Ministro de Fomento of the Mexican Republic, Excelencia Don Fernando Leal; and to the governor of the State of Sonora, Señor Don Ramón Corral. Equal acknowledgments are due to various United States officials, notably Honorable W. Woodville Rockhill, First Assistant Secretary of State when the expeditions were planned; and it is a pleasure to advert to the active interest taken in both expeditions by Honorable S. P. Langley, Secretary of the Smithsonian Institution, and to the careful attention given the 1894 expedition by the late Dr G. Brown Goode, Assistant Secretary of the Institution.

Mr Willard D. Johnson did invaluable service in connection with the second expedition, particularly in the execution of surveys and the construction of maps in inimitable style. Mr William Dinwiddie is to be credited with the excellent photographs made during the 1894 expedition, with the representation of the devices used in Seri face-painting, and with various other aids to the investigation; while Mr J. W. Mitchell is to be credited with the photographs made on Isla Tiburon, and with other contributions to the success of the 1895 expedition. Acknowledgments are due also to all of the participants in both expeditions, whose names appear in other paragraphs. Their contributions were not primarily intellectual, yet were of a kind and amount to be forever remembered among men who have worked and hungered and thirsted and stood guard together. The deepest debt connected with the field work is to the now venerable but ever vigorous pioneer, Señor Pascual Encinas; and no small part of this debt goes over to his estimable spouse, Señora Anita Encinas, who twice traversed the long road from Hermosillo to Costa Rica in the interest of the 1895 expedition.

The scientific results of the researches have been enriched by invaluable contributions from Director Powell's store of ethnologic knowledge, and by suggestions from Messrs Frank Hamilton Cushing, F. W. Hodge, James Mooney, and other collaborators in the Bureau of American Ethnology. The qualities of the colored illustrations are due largely to the artistic skill of Mr Wells M. Sawyer, by whom they were designed, and of Mr DeLancey Gill, by whom the proofs were revised. The Spanish translations are due chiefly to Colonel P. F.

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and more than ordinary littoral variety; for the waters of the gulf are warmed by radiation and conduction from its sun-parched basin, while the concentrated tides distribute and stimulate the species and keep the vital streams astir.

Local Features

Considered as a tribal habitat, Seriland comprises four subdivisions of measurably distinct character, viz, (1) the broad desert bounding the territory on the east; (2) the mountainous zone of Sierra Seri; (3) Tiburon island and the neighboring islets; and (4) the navigable straits and bays contiguous to island and mainland.

1. So far as its marginal portions are concerned, Desierto Encinas is a typical valley of the Sonoran province, sparsely dotted with vital colonies of the prevailing type and variegated by the exceptionally luxuriant mesquite forests of the Bacuacho and Sonora fans; but the interior of the valley is rendered distinct by the fact that it lies near, if not below, the level of the sea.[1] The central feature is Playa Noriega—a film of brackish water for a few days after each considerable semiannual freshet, a sheet of saline mud for a few weeks later, and for the greater part of the year a salt-crusted sheet 20 square miles in area, level as a floor and unimpressionable as a brick pavement. The playa is rimmed by dunes 10 to 40 feet in height, and about these and along the arroyos which occasionally break into it there is some aggregation of salt-enduring shrubs, evidently sustained in part by the semiannual freshet with its meager vapors and fogs. Outside this rim the surface is exceptionally broken; low dunes and irregularly wandering banks of soft and dust fine sand are interspersed with meandering salt flats much like the central playa, ranging from a few feet in width and a few yards in length up to mappable dimensions, as in the lesser playa lying east of the great one; and many of the dust-banks are honeycombed with squirrel burrows. This annulus of broken surface is narrow on the west, soon passing into okatilla scrub and then

[1] The expedition of 1895, during which Seriland was surveyed, was not provided with apparatus for accurate vertical measurement, and hence altitudes were only approximately determined. The determinations by Mr Johnson, who executed the topographic surveys, indicated that even the lowest part of the valley is somewhat above sea-level; but other facts indicate that it actually lies below the level of the waters of the gulf, and forms a miniature homologue of Colorado desert (in southern California): in the first place the central playa, which is undoubtedly flooded occasionally if not semiannually, does not embouch into, and has no channels extending toward, the sea; in the second place it is highly saline; again, the alluvial fans of Rio Bacuacho and (especially) of Rio Sonora are so pinched as to intercept and drain the trough occupied by Laguna la Cruz in its southern portion and Playa Noriega in its northern portion; concordantly, the detail configuration of the coast indicates marine transgression, apparently due to secular subsidence of the land—though the abundant marine shells of recent species toward the valley-bottom attest recent displacement of the sea. On the whole, the facts seem to indicate that, during recent geologic times, the lower portion of this valley was a shallow gulf extending northward (and probably also southward) from the eastern limit of Bahia Kino; that the importation and deposition of sediment, chiefly by Rio Sonora, outran the secular subsidence of the land so far as to displace the waters of the gulf in the central portion and to separate the northern arm from the sea; and that the waters of this northern arm were subsequently evaporated, disappearing finally in the central playa in which local inflow and evaporation are balanced by the usual mechanism of interior basins.

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even during this halcyon term no Seri save Kolnslo and the Altar outlaw ever learned to live in a house; none but these and Mashém wore hats habitually; and, despite the fact that they often witnessed and sometimes playfully or perforce participated in the processes, no Seri ever really encompassed the idea of house-building or even of making adobe. Though surrounded by horses when near the rancho, they never learned to ride nor to use the animals otherwise than for immediate slaughter and consumption; though in frequent sight of skilful ropers, they never fully grasped the idea of the riata, preferring to seize their prey with hands and teeth; though familiar with the agricultural operations of the rancho, they never turned a sod nor planted a seed on their own account; though in frequent sight of cooking, they seldom began and never finished the process with their own food; though acquainted with firearms, they continued to regard them as thaumaturgic devices, and chose the bow and arrow for actual use; though submitting to apparel on the frontier, they commonly cast away the incumbrances on returning to their lairs; and no Mexican or other Caucasian ever saw within their esoteric life—their names remained unrevealed, their hair remained sacred, their mourning for the dead was unheard save at a distance, and no alien, even unto today, has ever seen the birth of their babes, the christening of their children, the burial of their dead, or the ceremonies of their shrines. The Seri and the whites were, indeed, mutually tolerant; but, so far as concerns mutual sympathy, the toleration was almost precisely on a par with that between the ranchero and the vulture-flock that scavengers his corrals—and when depredation began the toleration was of a piece with that between householders and their unwillingly domiciled rodents. It is not too much to say that the interracial mistrust and hatred of the Western Hemisphere culminates on the borders of Seriland; though the antipathy is commonly regarded by the alien tribesmen and the Mexicans as other than racial, since the Seri are felt to be hardly human—a feeling fully shared by the Seri, who undoubtedly deem themselves more closely akin to their deified bestial tutelaries than to the hated humans haunting their borders.

Even during the Encinas régime the Seri came in occasional contact with aliens on other parts of the frontier: on Hacienda Sersa, the somewhat remoter borderland outpost on the north, the relations between the landholders and the Seri were analogous to those on the Encinas plains, though less acute in the ratio of relative distance. Occasionally small parties of warriors journeyed to Guaymas[1] on balsas or on foot to barter pelican-skin robes for Caucasian commodities, chiefly aguardiente and manta; still more rarely similar pilgrimages were made to the outskirts of Hermosillo; a few marauding raids were made to the ranchos lying near Cieneguilla and Caborca; and a num-

[1] The accompanying plate XII is reproduced from a photograph of a small group of Seri traders taken near Guaymas, probably during the eighties. It was kindly furnished by F. A. Ober, who purchased it in Guaymas.

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SOMATIC CHARACTERS

142 Several physical characteristics of the Seri Indians are so conspicuous as to attract attention even at first sight. Perhaps the most striking is the noble stature and erect yet easy carriage; next in prominence is the dark skin-tint; a third is the breadth and depth of chest; another is the slenderness of limbs and disproportionately large size of extremities, especially the feet; still another is length and luxuriance of hair; and an impressive character is a peculiar movement in walking and running.

141/126/128 The mean stature of the adult Seri may be estimated at about 6 feet (1.825 meters) for the males, and 5 feet 8 inches (1.727 meters) or 5 feet 9 inches (1.73 meters) for the females, these estimates resting on visual comparisons between Caucasians of known stature and about forty adult Seri of both sexes at Costa Rica in 1894. In several of the accompanying photomechanical reproductions (e. g., plates XIII, XVI, XIX, XXIII, and XXVIII) a unit figure, introduced partly for the encouragement of the individuals and groups but chiefly to afford a basis for approximate measurement, gives opportunity for test of the estimate, the figure measuring 5 feet 11 inches (1.80 meters) to 5 feet 11½ inches (1.812 meters), and weighing about 215 pounds in the costume shown, including hat and boots.[1] These pictures and some thirty unpublished 141 photographs, like the observations on the ground, indicate that practically all of the fully adult males and several of the females overtop the Caucasian unit. The only definite measurement known is that of the youthful and apparently immature female skeleton examined by Dr Hrdlička, of which the dimensions indicate a stature (estimated by the method of Manouvrier) of about 5 feet 3⅞ inches (1.62 meters),[2] or 3½ inches above the female normal of 5 feet ¼ inch (1.53 meters) given by Topinard; but this considerable stature is, probably on account of the youth of the subject, much below the mean indicated by the ocular and photographic comparisons (it corresponds fairly with that of the Seri maiden represented in plate XXV, whose age was estimated at 18 years). Naturally this striking stature, especially that of the warriors, has been much exaggerated by casual observers; the typical warrior, El Mudo, depicted in plate XIX, is indeed commonly reckoned as a 7-footer, though his actual stature (diminished somewhat in the pictures by fearsome shrinking from the ordeal of photographing) can hardly exceed

[1] The average height and weight of the unit figure (that of the author) are about 5 feet 9½ inches and 200 pounds, respectively.

[2] Or about 1.6178 meters estimated by the method of Rollet; cf. The Races of Man, J. Deniker, London, 1900, p. 29).

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142 color distinction alone sufficed to distinguish the Seri from any other people at a glance.

Foremost among the general somatic distinctions between the Caucasian and the American native is the peripheral development of the former, displayed in better-muscled limbs, more expressive features, etc—i. e., the Caucasian body expresses a readily perceptible but difficultly describable peripherization, in contradistinction from the centralization displayed by the aboriginal body. Save in a single particular (the large feet and hands), the Seri exemplify this distinction in remarkable degree: their chests are strikingly broad, deep, and long, recalling the thoroughbred racer or greyhound; their waists are shortened by the chest development, yet are rather slender; their hips are broad and deep, with a clean-cut yet massive gluteal development; and, in comparison with the robust yet compact bodies, the tapering arms and legs seem incongruously slender.[1] This physical characteristic, like that of color, is insusceptible of quantitative expression, at least without much more refined observations than have been made; but its value may be indicated roughly by the statement that the Seri differs from the average aboriginal American in degree of somatic concentration as much as the average aborigine differs from the average Caucasian—though it is noteworthy that the departure in this direction from the aboriginal mean is in some measure regional (i. e., the Seri differ less in this respect from the Papago and other swift-footed natives than from the average tribesmen of the continent). The Seri robustness of body and slenderness of limb are brought out by the absence (in appearance at least) of adipose; the skin is strikingly firm and hard and evidently thick, yet the play of muscle and tendon beneath indicate a dearth of connective tissue and convey that impression of physical vigor which their familiars so miss in the photographs; and in no case, save perhaps in the young babe, could the slightest trace of obesity be discerned. Thus the Seri, male and female, young and old, may be described as notably deep-chested and clean-limbed quick-steppers, or as human thoroughbreds.

The somatic symmetry of the average Seri, marred somewhat by the slenderness of limb, is still more marred by the large extremities. The hand is broad and long, the fingers are relatively long as those of the Caucasian, the nails are peculiarly thick and strong, and the skin is so thick and callousel as to give a clumsy look to the entire organ; the feet are still larger and thicker-skinned, appearing disproportionately long and broad for even the heroic stature of the tallest warriors. The integument covering the feet, ankles, and lower legs is incredibly firm and hard, more resembling that of horse or camel than the ordinary human type;

[126]

[1] The photo-mechanical reproductions do but meager justice to the splendid chest development of the Seri, young and old; for they were not only at ceremonialest rest during the better hours at which photography was most feasible, but invariably quailed before the mysterious apparatus and crouched shrinkingly in such wise as to contract their chests and lose their habitually erect and expansive carriage.

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000 those so fully described by Hough,[1] and serves to explain the otherwise obscure genesis of the fire-sense, which must have accompanied and shaped that most significant of all steps in human progress, the conquest of fire.

411 The modern coordinate of the Seri arrow is the bow, made preferably from a straight and slender branch of the palo blanco. A typical specimen is illustrated in plate XXX; it is 4 feet 9½ inches long, with the outer face convex and the inner face flat; greatest width 1⅝ inches, narrowed to 1¼ inches at the hand-hold; thickness at the hand-hold 1 inch, thinning to five-eighths inch at 8 inches from this point; tapering gradually in both dimensions toward the extremities, which are rudely notched to receive the cord (of mesquite-root fiber). The specimen [284] illustrated has been cracked and repaired in two places; in one place the repair was effected by a rough wrapping of sinew, and in the other by slipping over the wood a natural sheath of rawhide from the leg of a deer. The specimen is of added interest in that it combines bow [372] and nether fire-stick ("Strong-Kind-Mother"), one of the friction holes being worn out to the notched margin, and the other remaining in usable condition, as shown in the enlarged marginal drawing.[2]

Compared with the delicately finished and graceful arrow, the typical bow is a rude and clumsy device; it displays little skill in the selection and shaping of material, and evidently involves little labor in manufacture—indeed, the indications are that more actual labor is spent in the construction of a single arrow than in the making of a bow, while the arrow-making is expert work, betokening craft of a high order, and the bow-making little more than simple handiwork of the [174] lowest order. The comparison affords some indication of the genesis of Seri archery, and at the same time corroborates the independent suggestion that the arrow is of so much greater antiquity than the bow as to represent a distinct stage in cultural development—though the precise cultural significance of the bow is not easily ascertained.

Efforts were made to have different Seri warriors at Costa Rica in 1894 114 assume the normal archery attitude, with but moderate success, the 123 best pose obtained (illustrated in plate XXVIII) being manifestly unnat- 126 ural and a mere reflection of the attitude in the mind of the Caucasian poser; while the results of inquiries served only to indicate that the normal archery attitude was purposely avoided for reasons not ascertained. Fortunately another observer was more successful: in the course of the United States hydrographic surveys in 1873, Commander (now Admiral) Dewey received several visits from Seri warriors on board the *Narragansett*; and on the occasion of one of these visits, Mr 114 Hector von Hayer, of the hydrographic party, caught a photograph of 126 an archer in the act of drawing his bow. The negative was accident-

[1] Fire-making apparatus in the U. S. National Museum; Smithsonian Report for 1888, pt II, 1890, pp. 331-337, and elsewhere.

[2] Ordinarily the nether fire-stick is of soft and porous wood, fetonote palo-verde and water-logged pine being preferred.

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ally shattered, and no prints are known to have been made from it; but the fragments were carefully joined, and were kindly transferred to the Bureau by Mr Von Bayer in 1897, and from them plate XXIX was carefully drawn. The posture (partly concealed by the drapery) is extraordinary, being quite beyond the reach of the average human, and impossible of maintenance for any considerable interval even by the well-wonted Seri. The posture itself partly explains the difficulty of inducing the warriors at Costa Rica to assume it, since it is essentially a fleeting one, and indeed but a part of a continuous and stressful action—it is no less difficult to assume, or to catch in the camera, than the typical attitude of a baseball pitcher in action. The posture thus fortunately caught is quite in accord with the accounts of Seri archery from the esoteric side given by Mashém, and with the exoteric observations of Señor Encinas, Don Andrés, and others; for all accounts agree in indicating that the archer commonly rests inert and moveless as the watching feline up to a critical instant, then springs into movement as swiftly as the leaping jaguar, and hurls, rather than shoots, one, two, or three arrows before rushing in to the death or skulking to cover as the issue may require.

The Seri archery habit is in every way consistent with the general habits of the tribe, alike in the chase and in warfare, in which the tribes men, actuated by the fierce blood-craze common to carnivores, either leap on their prey with purpling eyes and gnashing teeth, or beat quick and stealthy retreat; and it is especially significant in the light thrown on the bow as a device for swift and vigorous rather than accurate offense, an apparatus for lengthening the arm still more than does the harpoon, and at the same time strengthening and intensifying its stroke. The quick-changing attitudes of half hurling are equally suggestive of the use of the atlatl, and support Cushing's hypothesis[1] that the bow was derived from the corded throwing-stick. While the critical posture of Seri archery is unique in degree if not in kind in the western hemisphere, so far as is known, an approximation to it (illustrated in fig. 22) has been observed in Central Africa.[2] On the whole the Seri mode of using the bow, like its crude form and rude finish, indicates that it is a relatively new and ill-developed artifact, possibly accultural though more probably joined indigenously with the archaic arrow to beget a highly effective device for food-getting as well as for warfare; while the genetic stages are still displayed not only in the homologies between arrow and harpoon, but by the common functions of both arrow and bow with the fire-sticks.

Concordantly, as indicated by the use of the archery apparatus, the individual taking of large game is effected either by stealthy stalking or by patient ambuscade ended by a sudden rush; when, if the chase is successful, the quarry is rent and consumed as at the finish of the

[1] The Arrow: Proceedings Am. Ass. Adv. Sci., vol. XLV, 1-26, pp. 202-240.
[2] Gibre's Journey to the Livingston Tree. The Century Magazine, vol. LI, 1896, p. 766.

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smaller implement is *hupf* or *hupf* (the initial sound explosive, combining the phonetic values of *h* and *k*; the vowel nearly as in "put", or like "oo" in "took"); the term is clearly an onomatope, imitating the sound of the blow delivered on flesh, on a mass of partially crushed mesquite beans, etc—indeed, both the word and the sound of the blow seem to connote food or eating, while regular pounding with the implement (either in ordinary use or by special design) is a gathering signal. So far as ascertained, the term is not extended to other objects save potential implements in the form of suitable pebbles; but it is significant that there is no distinction in speech—nor in thought, so far as could be ascertained—between the natural pebble and the wear-shaped implement.[1] The local terms ahst and hupf are explicit and specific, and without precise equivalents in other known tongues; moreover, the objects designated are too inchoate in development and hence too protean in function to be appropriately denoted by the designations of implements pertaining to more differentiated culture (mortar, metate, pestle, muller, mano, etc). Accordingly it seems desirable to retain the Seri designations.[2]

A typical specimen of intermediate size, used commonly as an ahst, but susceptible of employment as a hupf, is illustrated (natural size) in plates XXXV and XXXVI.[3] It is a hard, tough, hornblende-granite or greenstone, with a few structure-lines brought out by weathering and wave-wearing. Its weight is 4 pounds 10 ounces (2.10 kilograms); its form and surface are entirely natural, save for slight battering shown on the two principal faces and still less conspicuous bruises along one edge (as imperfectly shown toward the left of plate XXXV). The specimen was found in a jacal (illustrated in plate VI) on Isla Ballena, within a few hours after abandonment, in the position in which it was hastily left by the last users; it was smeared with blood and fat (which still remain, as is shown in plate XXXV) and bits of flesh, and bore bloody finger prints of two sizes—those of a man and those of a woman or large child; beside it lay the hupf depicted in plate XLII. In its last use the unwieldly cobble served as an ahst, but the markings on the edge record use also as a hand implement.

A functionally similar implement is illustrated in plate XXXVII (on reduced scale; maximum length 8¼ inches = 210 cm.). It is of tough

[1] The failure to discriminate natural objects from artificialized implements produced from such objects by wear of use is a noteworthy trait of primitive folk. It is conspicuous among the acorn Indians of California, who fail to appreciate the manufacture of their own mills and who conceive that their bowlder mortars and creek pebble pestles, even when completely artificialized by a generation's use, are merely found and appropriated; and a similar state of mind persists among the well-advanced Papago, who have no conception of making their well-finished mortars and pestles, or even the stone tomahawks occasionally surviving, but regard the implements as fruits of discovery or treasure-trove only.

[2] It should be noted that the terms used in the titles of the accompanying plates are not denotive, but merely descriptive.

[3] This, like the other illustrations of the series (except plate LVI, which is a lithograph, partly process and partly handwork), are photo-mechanical reproductions made directly from the objects; all are natural size unless otherwise specified.

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411 and seldom stirred until the stranger approached within 50 or 60 yards; whence it may be assumed that these distances fairly indicate the ordinary range of Seri arrows. The few accounts of conflicts in which arrows are mentioned prove, however, that these missiles are discharged with great rapidity and in considerable numbers during the brief interval to which the fighting is customarily limited.

278 411 The most notorious feature of the Seri warfare, and that of deepest interest to students, is the reputed use of poisoned arrows. The scattered literature of the tribe, from the days of Coronado onward, abounds in references to this custom; the Jesuit authorities give somewhat varied yet fairly consistent descriptions of the preparation and the effects of these arrows; Hardy added his testimony as to the character of the poison; General Stone gave directly corroborative evidence; hacendero Encinas gives witness to the effects of the envenomed missiles on his own stock; while Mashém recounted to the 1894 expedition the various uses of the "poisoned" arrows and highly extolled their potency, though he was noncommittal—save in casual allusions—as to the details of the poisoning. A part of the arrows acquired by this expedition and now preserved in the National Museum were professedly poisoned; they are easily distinguished by a thin varnish of gummy and greasy substance over the iron tips and wooden foreshafts, and especially about the attachments of mesquite gum and sinew. According to Mashém's asseverations, such arrows are habitually used in war save when the supply is exhausted by continued demand; they are also used occasionally in hunting, especially for deer and lions (i. e., the swiftest and fiercest game of the region); and the use of the poisoned missile does not destroy the meat of the animal, though the portion immediately about the wound is "thrown away". Two of [126] the treated arrows brought back from Costa Rica were submitted to Dr S. Weir Mitchell some months afterward for examination, and for identification of any poisonous matter found on them; but no poison was detected. On the whole, the data concerning the reputed arrow poisoning are less definite than might be desired; yet they are sufficient to suggest the nature of the custom with considerable clearness.

278 [811] In any consideration of Seri customs it is to be realized that the folk are notably primitive in thought, and hence deeply steeped in that overweening mysticism which dominates all lowly folk—that they still cling to zoomimic motives in their simple handicraft, and are still wholly within zootheism in their lowly faith. In the light of this realization the numerous consistent records of the preparation of the poison are easily interpreted, and are found to be fully in accord with the prevailing motives of the tribe; and the interpretation serves to explain the somewhat discrepant accounts of the effects of the poison, effects ranging from nil to horrible sepsis. According to the more circumstantial recipes, the first constituent of the poison is a portion of lung, preferably human—a selection readily explained by pristine philosophy,

1: McGee E-5 (1894-1895)1898 NU31 Seri NU31

764 together by okatilla stems, the shocks being sometimes nearly as high and broad as the jacales. A few of the scatophagic shells were found about the bramble-marked graves at Pozo Escalante, and a single one [768] at Barranca Salina. In general the association of cemeteries and rancherias, or of graves and jacales, indicates that habitations are usually abandoned for a time when a death occurs within or near [415] them.

FIG. 39—Mortuary olla.

The most conspicuous cairn seen in Seriland was well within Tiburon. It stands on the southern side of a little rock-butte about a mile and a half east-southeast of Tinaja Anita, south of the main arroyo, and near where the trail from the tinaja bifurcates toward Arroyo Carrizal and Punta Narraganseett, respectively. It is shadowed by a notably large and widespreading paloverde, and is in the form of a cone estimated at 7 feet in height and 18 or 20 feet across the base. The materials, at least on the surface, are rounded pebbles and cobbles, possibly from the adjacent arroyos, though more probably from the beaches, of which the nearest is miles away. It was not determined to be mortuary.[1]

On the death of the matron, a grave is scooped out by means of shells

[126]

[1] As an indication of the conditions for observation in Seriland, this cairn is fairly typical: it was seen but once (on December 23, 1895), and the observation was limited to a few minutes by the attendant circumstances. On the evening before the party landed at Campo Navidad, with the hope of working up the coast nearly or quite to Punta Tormenta on the following day; but before morning a dowdy gale was whitening the waters of Bahia Kunkaak so fiercely as to prohibit embarkation. Meanthne the supply of water—that standard commodity of arid regions—was too nearly exhausted to permit inaction; so while Mr Johnson with three guards ascended the Sierra to establish a new topographic station, the leader of the party with the remaining seven men set out in search of water. The nearest known agnaje was that of Arroyo Carrizal; but under the hypothesis that some of the better-beaten trails turning northward might lead to nearer water, one of them was taken; and after turning back from half a dozen false scents, the principal trail was followed to the well-known Tinaja Anita, 13 miles by the trail from Campo Navidad; and here the party watered. It was on the return trip that the cairn was discovered; but the party were laden with filled canteens and sarapapes and coffeepots, the day was well spent, and the camp more than a dozen miles distant even over the air line traversing spall-sprinkled taluses and sharp-edged rocks; moreover, the men were naturally and necessarily heavily armed and on constant guard. Accordingly even the short stay and cursory notes involved an additional mile of darkness on a trail so rough as to cut through shoe-soles and sandals and catch scents of blood to tempt coyotes to the camp site. Thus it was that the cairn was not more critically examined and is not more fully described.

3:Davis & Dawson E-5 (1922-1940) 1965
NU31 Seri NU31

105 178 and a veteran of nearly a century of warfare against the soldiers of Sonora. The turtle remained their most important source of food, and the pitahaya harvest the most enjoyed. The crafts of their old culture were largely gone, however. Hoop-iron had come in for many uses: harpoon points, scrapers, and knives. The bow and arrow had been almost entirely supplanted by rifles of which the tribe possessed more than thirty. The handmade olla was fast disappearing in favor of the five-gallon tin can, and water [482] carrying, now much done by the males, was accomplished by means of a palanca, borne on the heavily calloused shoulder, to which a can was suspended from each end.

178 396 It seemed that the balsa building art was encountered barely as it passed into extinction, for the last balsa known to have been made by the Seris was found in use near [126] Kino, in 1922. This rare prize was immediately bargained for and in exchange it was agreed that the tribesman should have lumber to build a boat large enough for all the people of his family. A few months later the finished craft, caulked with a "pitch" made

[p. 264(A)]

documentary data and second, also the archaeological data. The subject matter unfortunately is absent from the first. As for the archaeological data, there is none as yet to date for the area except Giffor's unpublished manuscript. Nor have we the kind of ethnography that would be of help—not until ethnographers will pay greater attention to the naturalistic knowledge of the people. Nor can the matter of the Seris' cultural connections be undertaken with the present material with any degree of reliability, simply because no such material exists for the neighboring group.

However, few suggestions outside the limitations and the main object of the present analysis can be made. From the fragmentary data available I shall try to show the change in utilization of animals by the Seris. I think I can also indicate a few points in support or denial of this or that idea of the Seris' cultural connections. I can also suggest the direction of the attitudes toward animals in the Seri culture, in a sphere which normally we assign variously within the domain of religion or world view. I can also indicate some of the major changes in the Seris' exploitation of general environment. All these can be suggested only fragmentarily, as only small bricks toward a generalized structure of our knowledge of the Seri culture. To this extent the present analysis should be helpful to the future student of the Seri culture and to our general understanding of it.

Procedure

The field work on which this material is based has been done during the summer of 1953, June-September and again for one week in May, 1955. The second visit took place at a most inopportune time, amidst bad measles, dysentery and a flu epidemic which completely disorganized the tribe and persuaded most of them to flee Desemboque into the coastal desert.

The work was accomplished mostly in Desemboque, the Seris' largest and most permanent settlement after 1940 where most of them lived. Occasional side trips were undertaken later to Hermosillo, Estero Sargente, Campo Vivora, Tiburon and some of the other places mostly with the view of evaluating their ecological nature and for the observation and acquisition of the zoological materials not available in Desemboque. These trips had been undertaken in the company of the Seris who then also doubled up as informants.

During the first two weeks of my stay in Desemboque, I did no interviewing but concentrated on the collections of zoological material, occasionally and informally asking for the name of this or that animal. After two weeks regular interviewing work was commenced, first with an aid of Mr. Leo Sandoval, Mexican, U.S.—educated school teacher, but later on entirely without an interpreter. There are sound reasons for this practice. Direct questioning allows the interrogator to evaluate the replies in their less obvious nuances, the reactions of the informant to the question, his hesitations, uncertainties and the like.

In the event of well-known animals with those colloquial Spanish name everybody, Mexican and

Schmalkin E-5 (1963-1968)1982 MUSI Seri MUSI

Scientific	Common Name
Octopus bimaculatus	Two spotted octopus
Tetinebrachiata	Sea-hare
Ischnochiton Magdalenensis	Gulf Chiton
Ischnochiton lecpigatus	Chiton
Cadakia distinguenda	Clam
Cardium consors	Cockle
Laevicardium elatum	Giant Cockle
Carditamera affinis	Ruffled clam
Acmaea dollians	Limpet
Crucibulum spinosum	Spiry Limpet
Chione undatella	Frilled chione
Chione californiensis	California chione
Pteria peruviana	Wing shell
Isognomon chemnitzianus	Pouch shell
Volsella capax	Horse mussel
Crepidula aqueosa	Boat shell
Olivella dama	Olive shell
Cypraea annettae	Annetta's cowry
Tegula rugosa	Turban shell
Conus regularis	Cone shell
Phyllonotus erythrostomus	Pink-mouthed Murex
Turritella broderipiana	August shell
Polinices reclusiana	Southern moon-shell
Phallium abbreviatum	
Chlamys subnodosa	Noded scallop
Atrina maura	Pen shell
Naicuia pacifica	
Turbo (Callopoma) fluctuosa	Turban shell
Solenostira pallida	Top shell
Cerithium stercusmuscarum	Spindle
Knefastia funiculata	Spindle
Neritina luteofasciatus	Nerite
Columbella fuscata	Dove shell
Trivia radians	Coffee bean
Tellina rufescens	Tellen shell
Fiona ventricosus	Fig shell
Nioche histrionico	?

While most specimens were identified from live material collected in tide-pools and kept in buckets as long as they lasted, some dead shells had also been used, especially those from the kitchen-middens rather numerous in the immediate Descmboque area.

By far most of the species had been identified by Dr. J. P. E. Morrison of the United States National Museum. To these I added a few identifications of my own, while Dr. Grace Pickford of the Osborn Laboratories, Yale University, identified the octopus and Dr. Rudolf Stohler of the University of California identified the chitons.

Economy

A very considerable proportion of the molluscs is used by the Seris in various ways. The tabulation will present the data much more clearly than could be done in a discussion.

[P. 38 A]

000 wear ceremonial feathers as did our western Indians. I saw no skin or
164 cutaneous disease, or evidence of tuberculosis or of trachoma---the curse of our Indians.

192 One boy-child of five years was a handsome child---fat, round,
302 sturdy, with roving great black eyes, large thick lips, a picture of
[24] perfect health. He was almost naked. His hair was done in a pigtail
[657] with a red string braided into it. His face like all the others was dirty, but he waded into the shallow water with a short spear and I saw him catch two crabs with his little harpoon. The water did not bother his face.

415 They had no plates or eating tools, except large deep clam shells,
412 cast up by the sea, which served as cups and dippers. Their long, keen
364 belt knives were used for cutting, carving or skinning, and always the
[238] fingers for eating. They gathered in a circle around an olla of seeds of long grass growing on the sea bottom prepared by winnowing, parching and grinding, and then cooked with turtle oil. Each one dipped his or her fingers into the olla and conveyed them to the mouth without losing a drop, and licked them off with great relish.

231 The dogs eat with the family. There were six or seven half-starved
264 ones. If someone picked up a piece of turtle flipper the dog often took the first lick at it, bit off a piece or licked it before it reached the owner's mouth. The dogs were not punished. They were just slapped to keep them out of the pots.

123 We had a great time that evening in Seriland. The young man played
534 his violin. This consisted of a hollow box cut out of a *palo verde*
[229] tree, and a piece of pine about sixteen inches long; terminating in a
[233] hollow where a single peg was fitted. The one string was twisted deer
[237] sinew, and the bridge was a small round clam shell at the far end. The
[513] bow was a small bent stick and some black horsehair. On the handle was a wad of rosin fastened underneath. By fingering this string a few weak squeaky notes were made, and this was the classical music of the Seris.

Manuel Encina seized his gourd rattle and began chanting. Herrera tapped a tin can and I beat on an inverted basket and the orchestra
535 was in full swing. A young girl, Rosa, dragged out a turtle shell and
123 standing on it began to dance. This dance consisted of stepping up and down quickly with each foot alternately, and this stamping, barefooted, emitted a hollow sound. Every once in a while I let out an
[124] Indian yell which pleased the Seris very much. For two hours they had a real swell time. We took one flashlight of the proceeding.

[393] Each family was in their hut, which afforded very slight shelter
[385] as they were only partially roofed over and the sides were broken
[359] down in places. The huts were all adjoining and each had a little
[341] campfire, which did not give much illumination, so the dancing was in semi-darkness.

(text continues on p. 163)

123 relief and contentment rose, and everybody smiled. This concoction I placed on the fire while the Indian stirred with a long stick. It took half an hour to cook into a thick sticky paste, gummy white.

[415] Meanwhile, the women vanished and returned with various vessels: greasy baskets, a black chamber pot, frying pans, ollas, stew pots, shells, any old thing---even a cuspidor. When ready, the Indians dipped the sticky mess out with a cup into the various vessels and the women and children licked it up. Some of the children covered the back of a large clam shell with the paste and then licked it off, repeating this until it was gone. Most of the people hooked their fingers into it and licked them off time and again. Any drip on the outside was carefully licked off that four gallons of goo. I do not think one single drop was lost.

• 126 123 As one little girl was carrying away a clam shell of paste I secured her photograph. It was a sight not soon to be forgotten, to watch these little ones dip in their fingers, mostly two, sometimes three fingers and contentedly lick them off.

Wishing to secure a photo of the Indians in Pelican skin kilts, Roberto induced Chico Romero to strip and wrap a kilt of Pelican skins around his waist. He did this and Roberto secured a good photograph. For this service, Chico demanded three oranges which he gave to his children.

By coaxing and wheedling and joking, Roberto finally persuaded a young woman to put on the Pelican kilt, and she gradually pulled off her shirt, or waist, or whatever name it goes by, and laughingly permitted it. As her brown shoulders and breasts were exposed she covered them with her arms and hands while I took the photo. I gave her some blue powder to decorate herself and a little round mirror.

372 Chico Romero made a fire drill out of a piece of dry driftwood from a cottonwood tree, and then made a fire by turning the stick between his hands. After three or four minutes the fine dust became punk and turned into a live coal. This he carefully put in some dry grass and by holding it up in the wind it was fanned into a flame. The price of this was a red bandanna.

372 773 825 The legend of Fire was told to me later by the campfire. The Seris' god sent down a fly to Seriland to show the Indians how to make fire. The fly was pointed out to me one day. It was a trifle larger than a house fly with a body of shining green and blue.

"Now," they said to me, "notice when it lands. Did you not see it take its two hands, rub them over its head and then rub them together a few times?". . ."Each time it settles it rubs its hands together, and our Indians noticed this and in this way we were taught by this little fly how to make fire by rubbing a stick between our two hands, back and forth. One fly came to earth and found something dead and he rubbed a stick between his hands and made a smoke signal

12: Moser L-5 (no date) 1964
(ca. 1960) NU31 Seri NU31

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NOTES

104 386 114

1. The phonetic values of the symbols used are the following: t is voiceless dental stop; k is vl. velar stop; ? is glottal stop; W is vl. labial grooved-rounded spirant; s is vl. alveolar spirant; z is vl. alveo-palatal spirant; l is vl. lateral spirant; j is vl. velar spirant; x is vl. back velar spirant; m is labial nasal; n is dental nasal; i is a high close front vowel; e is a low close front vowel; a is a low open central vowel; o is a mid close back vowel.

386 784 881

2. The restriction as stated to me by various women pertains only to young girls below the age of menarche. Actually, however, none of the above-mentioned young men and women, most of them in their twenties, was allowed to observe.

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3. Plant specimens are deposited in the Herbarium of The University of Arizona.

386 114

4. The blue "pencil" which McGee describes (McGee 1898: 166) and pictures (McGee 1898: Plate XXVII facing p. 170) is apparently the ?anterj koil.

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